or to genetic peculiarities or to both causes, the trees in this planting showed a rather large proportion of irregularities in their phyllotaxy. Here 820 trees, i. e. only 78.8 per cent, were reported with leaves in regular whorls of three, 3 with whorls of four, 60 with leaves opposite, and 68 with mixed opposite and whorled phyllotaxy. 78 showed an unequal elongation of different sectors of the stem, resulting in correspondingly irregular phyllotaxies. Of these 11 were reported as having an alternate phyllotaxy; 63 had a mixed phyllotaxy with leaves alternate and whorled, 9 with leaves alternate and opposite, and 6 with leaves alternate, opposite and whorled.

These irregularities are similar to the irregularities in arrangement that are of common occurrence in the transition region from the foliage to the floral portion of many phanerogamous shoots. In *Catalpa*, opposite and alternate arrangements are frequent in the transition region, associated with a reduction in size of the shoot axis and of the leaves. It seeems probable that many records of the phyllotaxy of *Catalpa* may have been taken from flowering shoots, and so from this transition region, rather than from the normal foliage shoot. None of the 2040 trees here recorded had attained flowering age. 88.5 per cent of them had their leaves in whorls of three.

OBERLIN COLLEGE, Oberlin, Ohio.

THE SEVENTH CENTURY OF ADDITIONS TO THE FLORA OF VIRGINIA

M. L. FERNALD

(*Continued from page 405*)

*CROTALARIA SAGITTALIS L., var. OBLONGA Michx. Fl. Bor.-Am. ii. 53 (1803). NORTHAMPTON COUNTY: dry pine woods south of Kendall Grove, no. 5330; dry sandy pine woods, Eastville, no. 5322. GREENSVILLE COUNTY: sandy roadsides and borders of cultivated fields northeast of Gaskins, no. 13,354. See p. 360.

Typical *Crotalaria sagittalis* has the bracteal leaves (those subtending the inflorescences) narrowly oblong to lanceolate or linear. Such a plant is wide-ranging, from tropical America to the Northern States and southernmost Canada. Var. *oblonga*

has all the leaves, both the true foliage and the bracteal leaves, broadly elliptic-oblong, the upper barely if at all reduced or narrowed. Just such a plant can be readily picked out from among the superabundant typical *C. sagittalis* from Mexico and Florida. From north of Florida there are no specimens in the Gray Herbarium except ours from eastern Virginia, though it is presumably in the Carolinas and Georgia. Michaux, l. c. treated *C. sagittalis* as an inclusive species with three coordinate varieties:

> Var. α. *linearis:* foliis linearibus, caule erecto.
> — β. *oblonga:* foliis ovali-oblongis; caule erecto.
> — γ. *ovalis:* foliis subelliptico-ovalibus, caule procumbente.
> *HAB.* in Virginia et Carolina.

C. sagittalis α. *linearis* is the narrowest-leaved phase of the common plant. Var. *ovalis* is, as shown by a photograph of the type, *C. angulata* Mill. (*C. rotundifolia* Poiret, *C. ovalis* (Michx.) Pursh); while the same photograph shows var. *oblonga* to the plant here so interpreted. Although Michaux gave the undifferentiated "in Virginia et Carolina" for all three varieties, the sheet preserved in his herbarium gives no locality. True *C. sagittalis* (var. *linearis*) is common in eastern Virginia and *C. angulata* (*C. sagittalis*, var. *ovalis*) frequent in the southeastern counties. Var. *oblonga* is there evidently very rare; I am assuming that it is new to the recorded flora of the state.

C. SPECTABILIS Roth. To the few recorded stations add one in HENRICO COUNTY: waste places and railroad ballast, Richmond, no. 12,374.

AESCHYNOMENE VIRGINICA (L.) BSP. Local range extended to ESSEX COUNTY: sandy and muddy tidal shore of Rappahannock River, northeast of Loretto, no. 13,957; brackish marsh along Piscataway Creek, northwest of Dunnsville, no. 13,358.

DESMODIUM OCHROLEUCUM M. A. Curtis. To the single definite Virginian station, in Sussex County, add one in SURRY COUNTY: rich calcareous wooded ravine near James River, northwest of Chippokes, no. 13,359. See p. 362, where it is shown that the record from Caroline County was based on a misidentification.

*D. CANESCENS (L.) DC., forma **albinum,** f. nov., petalis albidis.—Surry County, VIRGINIA: rich calcareous wooded ravine along James River, Claremont, September 7, 1941, *Fernald & Long*, no. 13,627 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.).

*PHASEOLUS POLYSTACHIOS (L.) BSP., var. **aquilonius,** var. nov., foliis submembranaceis supra laevibus, subtus subvelutinis; rhacheos pilis plus minusve incurvatis; calycibus vix venosis; seminibus valde biconvexis atrorubentibus 5–8 mm. longis 4–6 mm. latis.—Connecticut to the upland of North Carolina. The following are characteristic. CONNECTICUT: Franklin, September 29, 1906, *R. W. Woodward* (TYPE, 2 sheets, in Herb. Gray.); New Haven, *Dana;* base of East Rock, New Haven, August 26 and September 27, 1904, *Woodward;* rocky bank near shore of Housatonic River, Huntington, August 18, 1903, *Harger*, no. 4148; rocky woods near seashore, Norwalk, August 23 and September 16, 1901, *Bissell.* NEW JERSEY: by Delaware River road above Milford, Hunterdon County, August 29, 1906, *Van Pelt & Long;* loamy, wooded slope along streamlet tributary to South Branch, Timber Creek, Blackwood, Gloucester County, July 31, 1917, *Long*, no. 17,034. PENNSYLVANIA: Easton, August 29, 1868, *Porter;* steep slope along Hay Creek, ½ mile northeast of Trap Rock Station, Berks County, August 19, 1938, *Hans Wilkens*, no. 5648; wooded roadside, north of Hanover, York County, August 25, 1938, *Louise F. A. Tanger;* rocky hill-slope, quartzite ridge, 1 mile east of Black Horse, Chester County, August 5, 1933, *Fogg*, no. 5796; mountains about Cold Spring, August 7, 1889, *Small.* DELAWARE: Brandywine, June and July, 1887, *Edw. Tatnall;* Centreville, August 24, 1874, *Commons.* DISTRICT OF COLUMBIA; near Washington, September 25, 1897 and July 30, 1899, *Steele.* VIRGINIA: wooded hill near Dead Run, August 14, 1921, *Leonard & Killip*, no. 897; northwest of Belt's, 1 mile north of Hopewell Gap, Fauquier County, August 9, 1936, *Allard*, no. 2079; Bedford County, August and September, 1871, *A. H. Curtiss.* NORTH CAROLINA: rich woods, Great Smoky Mts., Swain County, August 1, 1891, *Beardslee & Kofoid.* See p. 367.

Whenever we have collected *Phaseolus polystachios* in southeastern Virginia Mr. Long has regularly protested that it is quite unlike the plant he knows in the Delaware Valley and elsewhere farther north. During September and October of 1941 we twice collected the southern plant under conditions where it was necessary to carry the specimens for a quarter of an hour to a full hour or more before they could be cared for. In both cases the subcoriaceous leaves remained stiff and unwilted. The northern var. *aquilonius*, carried in the open for five minutes, would become a hopelessly wilted wreck. Furthermore, the leaflets of the southern plant, when fresh, adhere very tightly to the fingers or clothes by their minutely scabridulous surfaces and

the lower leaf-surfaces are softly pubescent, almost velvety to the touch. Fortunately we secured ripe fruit—fortunately, for comparison of the southern and the northern plants brings out important seed-characters. These in conjunction with the other points give the following contrasts.

P. POLYSTACHIOS (L.) BSP., based on *Dolichos polystachios* L. Sp. Pl. 726 (1753) (type coll. by Clayton in eastern Virginia, photograph in Gray Herb.). *P. perennis* Walt., Fl. Carol. 182 (1788). *P. paniculatus* Michx. Fl. Bor.-Am. ii. 60 (1803). Leaves firm, not quickly wilting, minutely scabridulous above, softly subvelutinous beneath, when fresh strongly adherent, the larger leaflets 4–8 (–10) cm. long; rachis usually short-hispid, with straightish divergent hairs; calyx (dry) relatively thin, the veins and veinlets evident; seeds flattened on both sides, black or black and gray, 5–10 mm. long, 5–6.5 mm. broad.—Florida to Arkansas, north to eastern Virginia, West Virginia, Tennessee and southern Illinois.

Var. AQUILONIUS. Leaves submembranaceous, promptly wilting, smooth and glabrous or glabrescent above, less pilose beneath, only slightly adherent, the larger leaflets up to 1.3 dm. long; rachis usually with inflexed pilosity; calyx (dry) of thicker texture, its veins obscure or not visible; seeds strongly biconvex, reddish-black (the red usually obvious under a hand-lens), 5–8 mm. long, 4–6 mm. broad.—Southern Connecticut to Delaware and on the upland to North Carolina.

Without better material it is not now possible for me to state more fully the two ranges; either of the varieties may have a broader range. The identity of *Dolichos polystachios* L., basis of *Phaseolus polystachios*, is inferred from its resting wholly on a specimen of Clayton's, a photograph of which is before me. *P. perennis* of Walter can hardly be anything but the southeastern plant; and a full sheet, including ripe seed, of the type of *P. paniculatus* Michx., given, at least a century ago, to Asa Gray is wholly characteristic and with very flat and black seeds. In fact, all the material I have seen from southern Illinois is of typical *P. polystachios*. It is noteworthy, therefore, that, in describing his species from southern Illinois, Michaux explicitly said of it: "Planta more HEDYSARI [i. e. DESMODII] tenacissima . . . semina compresso-reniformia, nigerrima".

We have typical *P. polystachios* from the following stations in Virginia. EXACT LOCALITY UNKNOWN: *John Clayton*, photograph in Gray Herb. NEW KENT COUNTY: thicket bordering

Chickahominy River, Lanexa, no. 13,963. Prince George County: dry wooded slopes of gullies near Powell's Creek, Garyville, no. 8325. Dinwiddie County: dry clearings and borders of woods south of Burgess Station, no. 9080. Greensville County: dry sandy pine and oak woods north of Orion, no. 13,660. Southampton County: dry sandy open pine and oak woods 6 to 7 miles south of Franklin, no. 8736.

*Strophostyles umbellata (Muhl.) Britton, var. **paludigena,** var. nov. Planta glabra vel glabrescens, leguminibus plerumque 5–7 cm. longis, seminibus quadrato-oblongis furfuraceo-tomentosis 5–10 mm. longis, 3.5–5 mm. latis.—Fresh to brackish tidal marshes, District of Columbia and Virginia. District of Columbia or Maryland: river-marsh, East Branch of Potomac (now Anacostia River), September 5, 1902, *E. S. Steele* (distrib. under unpublished name). Virginia: fresh tidal marsh by Chickahominy River, at "Shady Rest", southeast of Windsor Shades (Boulevard Postoffice) New Kent County, August 31, 1940, *Fernald & Long*, no. 12,689; fresh tidal marsh by Lacey Creek, west of Walker, New Kent County, September 9, 1941, *Fernald & Long*, no. 13,663 (type in Herb. Gray.; isotype in Herb. Phil. Acad.); fresh tidal shore of Chickahominy River, Graves Landing, north of Holdcroft, Charles City County, September 10, 1941, *Fernald & Long*, no. 13,664; field about 5 miles west of Toano, James City County, August 13, 1939, *R. W. Menzel*, no. 306; fresh to brackish tidal marsh by Burwell's Bay, James River, at Bailey's Beach (MacKimmie's Wharf), near Rushmere (Fergusson's Wharf), October 10, 1941, *Fernald & Long*, no. 13,964. See p. 368.

Ordinarily *Strophostyles umbellata* occurs in dry sandy or argillaceous soil or pinelands, but sometimes in dune-hollows or damp habitats. It is not usually in deeply drowned estuaries, habitat of var. *paludigena*. In typical *S. umbellata* the young branches and stems are retrorse-pilose, usually rather densely so, the leaves glabrous or somewhat strigose-pubescent beneath, the legumes 3.7–5.5 cm. long, the seeds quadrate-short-oblong to subcubical, 3–4.5 (rarely to 6) mm. long and 2–3 mm. thick. The estuarine var. *paludigena* is nearly or quite glabrous, its legumes 5–7 cm. long, the heavily scurfy seeds quadrate-oblong and 5–10 mm. long by 3.5–5 mm. broad or thick. Some specimens from marsh habitats are quite transitional: for instance, material from edge of marsh, Chopa Wausic Creek, Virginia, *Tidestrom*, no. 7611, with less pubescence than in typical *S. umbellata* but more than in var. *paludigena*.

*Strophostyles helvola (L.) Ell., var. missouriensis (S. Wats.) Britt. Charles City County: sandy tidal margin of Chickahominy River, Ferry Point, no. 11,064. Isle of Wight County: thicket at base of seeping and calcareous bluffs along Burwell's Bay, James River, below Rushmere (Fergusson's Wharf), nos. 12,688 and 13,965. See p. 372.

Typical *Strophostyles helvola* is low and erect, 1.5–4 dm. high, or soon reclining and trailing (sometimes climbing) to a length of 1 or 2 m.; the principal leaves are often 3-lobed and fiddle-shaped, or, when unlobed, ovate and tapering by straight sides to a short acumination, the terminal leaflet 2–6.5 cm. long and 0.8–4 cm. broad. Var. *missouriensis* is high-climbing, ascending 3–10 m. Its principal leaflets are unlobed, broadly rounded to rhombic-ovate and gradually rounded to blunt or merely subacute apices, the terminal one 4–8 cm. long and 3–6.5 cm. broad. Its flowers are slightly larger (1–1.5 cm. long) than in typical *S. helvola* (0.8–1.3 cm.), its legumes often longer (5–10 cm.) as against 3.5–8.5 cm.; its seeds averaging longer (8–12 mm. long, with hilum 5–7 mm. long) as opposed to 6–9.5 mm. long, with hilum 4–5 mm. long. Var. *missouriensis* is a plant of calcareous shores and river-thickets, occurring from northern Florida to Arkansas, north to Pennsylvania (bank of Schuylkill River at Tunnell Hill, Phoenixville, Chester Co., September 1, 1929, *H. E. Stone*), the Potomac, southern Illinois, Missouri and Kansas. I have seen no material from between northern Florida and the James River.

*Pueraria Thunbergiana (Sieb. & Zucc.) Benth. Nansemond County: very extensively naturalized at border of rich sandy oak and hickory woods above Nansemond River, east of Cahoon Pond, northwest of Suffolk, nos. 13,372, 13,661 and 13,966. See p. 352.

Rhynchosia in eastern Virginia.—Two species of *Rhynchosia* abound in the drier soils of southeastern Virginia: one, a trailing or twining plant with stems and branches with spreading or reflexed pilosity, the earliest leaves simple and reniform, the later with 3 rounded to ovate, rhombic or elliptic leaflets only sparsely pilose to glabrescent, the plant passing (erroneously) in our manuals as *R. tomentosa* (L.) Hook. & Arn.; and a second species, erect, with tomentose or tomentulose pubescence, that on the stem appressed-ascending, the 3 oblong to oval leaflets

canescent-tomentose beneath, the plant known as *R. erecta* (Walt.) DC. Besides these, a third species, *R. simplicifolia* (Walt.) Wood, is regularly included in our manuals as extending north to Virginia.

Repeatedly rebelling at the use of the name *Rhynchosia tomentosa* for the Virginia plant which is *not* tomentose and confident that Linnaeus would not so misuse the term, I have looked up the treatments of the species from its original publication by Linnaeus in Sp. Pl. ii. 754 (1753). He there defined a plant in his own herbarium and cited as associated by him with it two which had been earlier defined. His treatment was as follows:

> *tomentosa.* 4. GLYCINE foliis ternatis tomentosis, racemis axillaribus brevissimis, leguminibus dispermis.
> Ononis caule volubili. *Gron. virg.* 81.
> Anonis phaseoloides scandens, floribus flavis sessilibus. *Dill. elth.* 30. *t.* 26. *f.* 29.
> *Habitat in* Virginia.

In Species Plantarum, ed. 2, ii. 1024 (1763) Linnaeus added a reference to Gronovius, ed. 2: 106 (1762); in his treatments in Systema Naturae, through ed. 12 (1767), the same diagnosis (abbreviated) was repeated, without the citations from Gronovius and Dillenius. In Gmelin's edition of the Systema, ed. 13, ii. 1106 (1796) the Dillenian figure was again cited; and Gmelin added to the synonymy the South American *Dolichos pubescens* L., thus adding needlessly to the confusion, since *D. pubescens* can hardly be conspecific with either of the Virginian plants. Willdenow, Sp. Pl. iii^2. 1061 (1803), followed Gmelin and appended to *G. tomentosa*, as var. β., *Dolichos pubescens*.

In North America, Walter, Fl. Carol. 184 (1788) had described *Trifolium simplicifolium*, basis of *Rhynchosia simplicifolia*, and *T. erectum* "caule subrigido erecto . . . tomentoso, foliis ternatis rotundatis rugosis tomentosis, spicis axillaribus", etc., basis of *R. erecta*. Michaux, Fl. Bor.-Am. ii. 63, 64 (1803), took up the whole group as a variable species with 3 coordinate varieties, *Glycine tomentosa* L.:

> Var. α. *erecta:* caule erecto; tomentosior; foliolis saepe oblongo-ovalibus.
> Trifolium *erectum.* Walt.
> — β. *volubilis:* caule volubili; foliis imis simplicibus, caeteris trifoliatis.

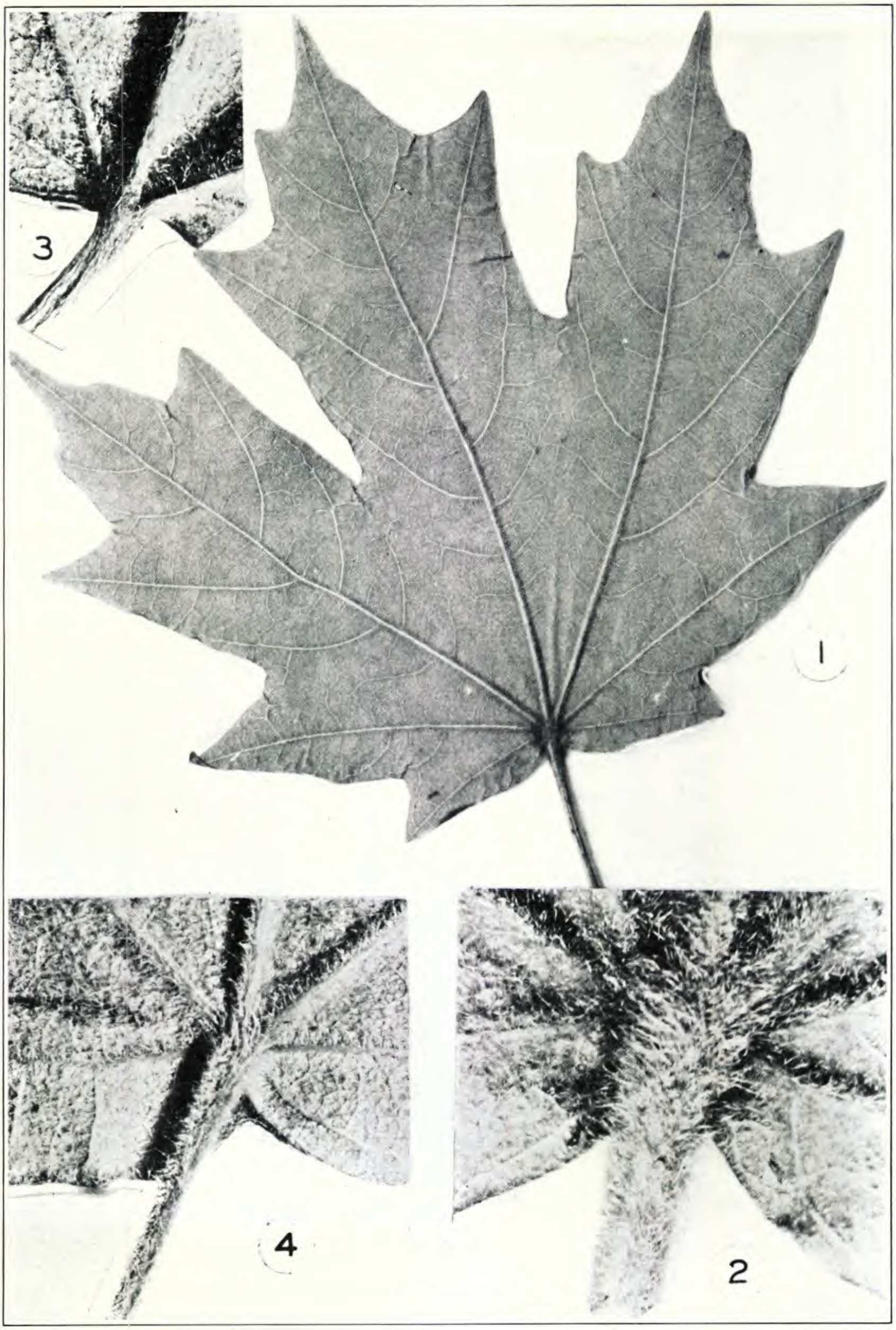

Photo. B. G. Schubert.

ACER FLORIDANUM: FIG. 3, lower surface of leaf and summit of petiole, × 6. Forma VILLIPES: FIG. 4, lower surface of leaf and summit of petiole, × 6. Var. LONGII, forma PLATYLOBUM: FIG. 1, leaf, × 1; FIG. 2, lower surface of leaf and summit of petiole, × 6.

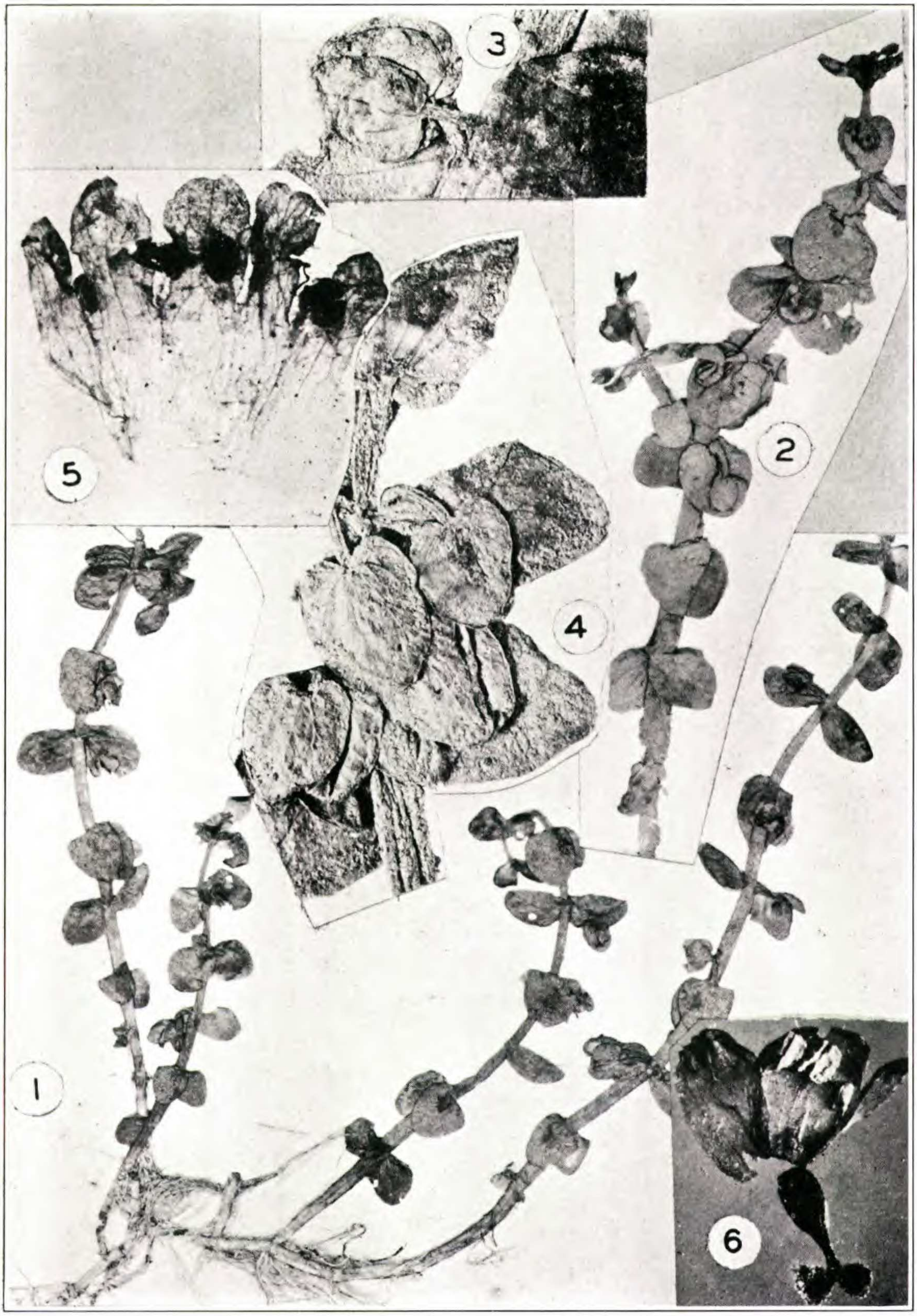

Photo. B. G. Schubert.

BACOPA STRAGULA: FIGS. 1 and 2, portions of plants, × 1; FIGS. 3 and 4, flowers, × 3; FIGS. 5 and 6, corollas, laid open, × 10.

— γ. *monophylla:* caulibus brevissimis; foliis omnibus unifoliatis sive simplicibus, subreniformi-rotundatis.
TRIFOLIUM *simplicifolium*. WALT.
Hab. in Virginia et Carolina.

Here, apparently, was the beginning of the record of *R. simplicifolia* (*R. reniformis* (Pursh) DC.) from Virginia. It should be noted, however, that Michaux was giving the inclusive range for all three plants included, two of which are well known in Virginia.

Pursh very promptly, in his Fl. Am. Sept. ii. 486 (1814), separated the simple-leaved plant as *Glycine reniformis* (with *Trifolium simplicifolium* and *G. tomentosa*, var. *monophylla* cited as synonyms) and restricted its range to Carolina and Georgia. Torrey & Gray, likewise, noting specimens seen, cited for this plant only South Carolina, Florida and Alabama. The northernmost specimens in the Gray Herbarium come from Cumberland and Moore Counties, North Carolina. It can safely be dropped from the Virginia list.

Returning to the two species actually in Virginia, the next important step in their history seems to have been their treatment, along with the species last discussed, as a separate genus *Arcyphyllum* Elliott in Journ. Acad. Nat. Sci. Phila. i. 371 (1818). Elliott's new genus, promptly united with *Rhynchosia* Lour. (1790), contained *Arcyphyllum simplicifolium* (Walt.) Ell., *A. erectum* (Walt.) Ell. and the newly proposed species,

2. *Difforme.*
A. caule volubili, foliis subrhomboideis, rugosis, interioribus simplicibus, superioribus ternatis, racemis axillaribus summitate confertifloris.
Glycine tomentosa, var. b. *volubilis*, Mich. 2, p. 62.
Hab. in aridis et cultis.

Elliott, writing from Charleston, South Carolina, obviously secured his *Arcyphyllum difforme* in that region. He very promptly abandoned it, however, for in his Sketch, ii. 234 (1822) he modestly refrained from mentioning it, even in synonymy, returning to the Linnean *Glycine*. Elliott's diagnosis in 1822 of *Glycine tomentosa*, beginning "G. caule volubili; foliis ternatis, rhombeis, rugosis", was so like his diagnosis of *Arcyphyllum difforme* that there can be no question regarding the identity of the latter.

DeCandolle promptly took up Elliott's new specific name, although failing to cite Elliott as its original author. In DC. Prodr. ii. 284 (1825), where *Arcyphyllum* appears in the generic synonymy of *Rhynchosia*, we find the following:

> 3. R. DIFFORMIS, caule volubili velutino, stipulis oblongo-lanceolatis, foliis infer. simplicibus summis trifoliolatis, racemis longè pedunculatis confertè subspicatis, cal. laciniis lanceolatis acuminatis . . . in aridis et cultis Carolinae. Glycine tomentosa var. volubilis Michx. fl. bor. am. 2. p. 63.

Although DeCandolle failed to cite the synonym, *Arcyphyllum difforme* Ell., the diagnosis, with "foliis infer. simplicibus summis trifoliolatis" and the habitat, "in aridis et cultis Carolinae" are so clearly derived from Elliott that the combination should certainly be written *Rhynchosia difformis* (Ell.) DC.

Torrey & Gray (1838) maintained *Rhynchosia tomentosa* in the all-inclusive sense, with vars. *monophylla*, *volubilis*, *erecta* and two more, all now regularly considered distinct species; and Gray, admitting the polymorphous group to the Manual in ed. 2, so treated it through ed. 5. So long as the several plants (whether erect and tomentose, with trifoliolate leaves; erect and with simple suborbicular leaves; or twining or trailing, with early leaves simple, the later trifoliolate and not tomentose) were all treated as *R. tomentosa*, the identity of the Linnean type was relatively unimportant. Now that the three (and other) elements are treated as species the identity of the plant which Linnaeus had immediately before him in preparing Species Plantarum (1753) becomes highly important. Dr. B. Daydon Jackson, in his Index to the Linnean Herbarium (1912), states that in preparing ed. 1 Linnaeus had a plant of his *Glycine tomentosa* in his own herbarium. This was studied more than a century ago by Asa Gray who, in his manuscript notes on the Linnean Herbarium, recorded: "*Glycine tomentosa!* = *Rhynchosia tomentosa* var. *erecta*, fol. oblongis (Specimen est Clayt.)." This erect plant, the actual TYPE, is really tomentose and is properly described by the trivial name used by Linnaeus. The twining or creeping plant, with broader leaflets is *not* tomentose. There is no question that the plate of Dillenius was made from the latter, and a Clayton specimen preserved at the British Museum is the latter (photograph before me). Clayton, obvi-

ously, collected both the common species of southeastern Virginia and Linnaeus included them both under *Glycine tomentosa*. The brief diagnosis of Gronovius, made from Clayton's material, was cited by Linnaeus only in its abbreviated form, as "Ononis caule volubili. *Gron. virg.* 81." When the original Gronovian account is looked up, however, it is found that Gronovius, like Linnaeus, cited the Dillenian plate of *Anonis phaseoloides scandens*, the twining species, but more important, he quoted Clayton's account of the plant: "Trifolium nunc volubile, nunc erectum", etc. In other words, the full account in Gronovius calls for stems either twining or erect. Clayton, Gronovius and Linnaeus, like Michaux, Torrey & Gray and others still later, saw only one species, although they had two.

In view of this evidence I am taking up for the erect plant with tomentose leaves and stems, which is now passing as *Rhynchosia erecta* (Walt.) DC., the appropriate name R. TOMENTOSA (L.) Hook. & Arn. The twining or trailing species with broader short-pilose to glabrescent leaflets, the plant erroneously passing as *R. tomentosa*, is R. DIFFORMIS (Ell.) DC.

*OXALIS EUROPAEA Jordan, forma **pallidiflora,** f. nov., petalis pallide colore limonis.—Isle of Wight County, VIRGINIA: seeping calcareous wooded bluffs by James River, west of old Fort Boykin, June 14 and 16, 1941, *Fernald & Long*, no. 13,060 (TYPE in Herb. Gray., ISOTYPE in Herb. Phil. Acad.).—A pale-flowered form of otherwise typical *O. europaea*. See p. 345.

*O. EUROPAEA Jordan, var. BUSHII (Small) Wiegand, forma SUBGLABRA Wiegand. NANSEMOND COUNTY: border of low woods, Adams Swamp, south of Baines Hill School, no. 13,061; gigantic plants, up to 1.125 m. high, the variety and form chiefly in the Mississippi Valley.

PTELEA TRIFOLIATA L. Local range extended to PRINCE GEORGE COUNTY: abundant in thickets and woods back of beach of James River, Windmill Point, Flowerdew Hundred, no. 13,062. See p. 346.

PONCIRUS TRIFOLIATA (L.) Raf. Range extended north to ESSEX COUNTY: border of dry woods northeast of Loretto, shrubs up to 4 m. high, fruit October 15, 1941, no. 13,967, flowers April 15, 1942, no. 14,185. See p. 372.

*RHUS COPALLINA L., forma **frondosa,** f. nov., paniculis valde foliosis.—VIRGINIA: border of fresh to brackish tidal marsh by Burwell's Bay, James River, at Bailey's Beach, near Rushmere, Isle of Wight County, October 10, 1941, *Fernald & Long*, no. 13,969 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.).

CYRILLA RACEMIFLORA L. Range extended northward into DINWIDDIE COUNTY: border of depression in argillaceous woods, west of Winfield's Mill, no. 13,970. See p. 374.

CELASTRUS SCANDENS L. Local range extended to CAROLINE COUNTY: steep wooded bluff by Rappahannock River, northwest of Return, no. 13,973.

ACER FLORIDANUM (Chapm.) Pax. To the few recorded stations in the state add the following from JAMES CITY COUNTY: rich woods and slopes by James River, Grove Landing, southeast of Grove, nos. 13,382, 13,386, 13,389, 14,186, 14,187, *Delisle*, nos. 1–6. See PLATE 725, FIGS. 1 and 2, and 727, FIG. 3. See pp. 359 and 360.

*A. FLORIDANUM (Chapm.) Pax, forma **villipes** (Rehder), stat. nov. Var. *villipes* Rehder, Trees and Shrubs, ii. 255 (1913). Quite like typical *A. floridanum* except in having densely pilose petioles and, often, young shoots. Of similar range and sometimes growing with typical *A. floridanum* (with glabrous branchlets and petioles). The following Virginian specimens belong here. JAMES CITY COUNTY: rich woods and slopes by James River, Grove Landing, southeast of Grove, no. 13,387; *Delisle*, no. 7; woods and thickets back of sand-beach of James River, Martin's Beach, southeast of Grove, no. 13,388. See PLATE 725, FIG. 3 and 727, FIG. 4.

*A. FLORIDANUM, var. **Longii,** var. nov. (TAB. 726). Arbor ad 30 m. alta, cortice albido deinde exfoliato, ramibus griseis ramulis juvenilibus saepe densissime velutino-villosis; foliis maturis subtus petiolisque dense velutino-villosis, petiolis crassis 1.5–2 mm. diametro, laminis subaequaliter longis et latis e basi plus minusve cordatis vel subtruncatis 3-lobatis 7–13 cm. longis 7–14 cm. latis, lobis anguste oblongo-ovatis longe attenuatis integris vel sparse lobulatis mediis 4–8 cm. longis; calycibus 3–4 mm. longis; stylo 2.5–3 mm. longo, stigmatibus 5–6 mm. longis; antheris 1.5–2 mm. longis; samaris 2.5–3.5 cm. longis, loculis horizontalibus 8–10.5 mm. longis 5–7 mm. latis, alis adscendentibus 1.7–2.5 cm. longis 9–11 mm. latis.—James City County, VIRGINIA: rich woods and slopes by James River, Grove Landing, southeast of Grove, July 29 and 30, 1941, *Fernald & Long*, no. 13,385 (branchlets nearly glabrous); April 19, 1942, *Fernald, Long & Abbe*, nos. 14,187 (TYPE in Herb. Gray.; ISOTYPE in herb. Phil. Acad.) and 14,189, May 5, 1942, *Delisle*, nos. 8–12.

Var. LONGII, forma **platylobum,** f. nov. (TAB. 727, FIG. 1 et 2), foliis late rotundatis cordatis 1–1.7 dm. latis, lobis late oblongis vel oblongo-obovatis lobis grosse acuteque lobulatis.—Southeastern VIRGINIA: rich woods and slopes by James River, Grove Landing, southeast of Grove, *Fernald & Long*, nos. 13,383 and 13,384 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.),

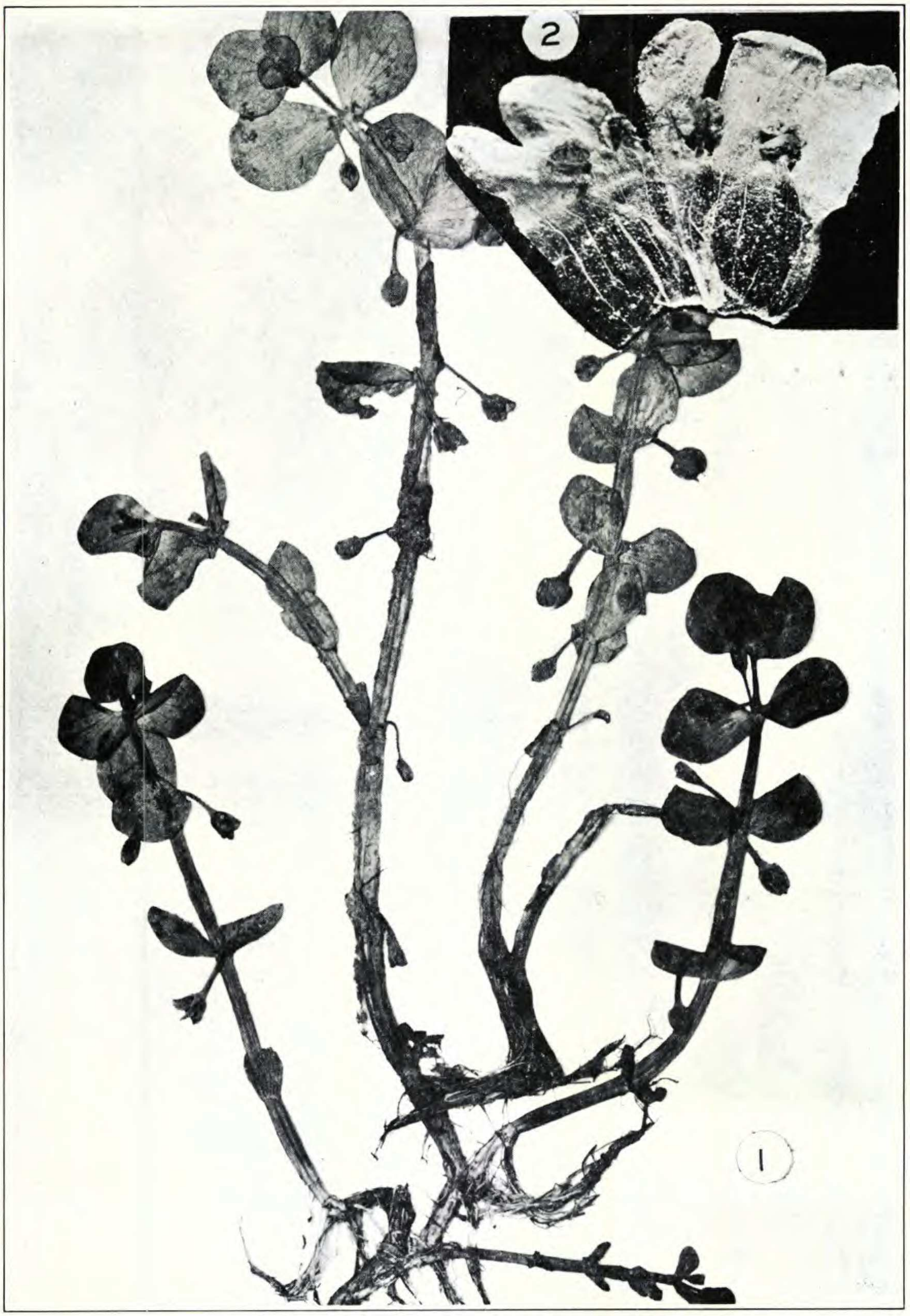

Photo. B. G. Schubert.

BACOPA SIMULANS: FIG. 1, plant, × 1; FIG. 2, corolla, laid open, × 10.

Photo. B. G. Schubert.

GRATIOLA VIRGINIANA: FIGS. 4 and 5, fruiting nodes, × 1. Forma ACUTIDENS: FIGS. 1 and 2, portions of plant, × 1. Var. AESTUARIORUM: FIG. 3, fruiting tip, × 1.

May 5, 1942, *Delisle*, nos. 13–15; rich calcareous slopes by Burwell's Bay, James River, below Rushmere (Fergusson's Wharf), Isle of Wight County, August 27 and 29, 1940, no. 12,718, April 17, 1942, *Fernald, Long & Abbe*, no. 14,190. Grimes, no. 3929, from calcareous bluffs along James River near Camp Wallace, is transitional between the typical var. *Longii* and forma *platylobum*, but the wings of the samaras are small for either.

When more fully understood *Acer floridanum* and var. *Longii* may prove to be specifically separable. In their extreme forms they are far apart but essentially all characters too closely converge for me to feel certain that they are more separable as species than the northern and upland *A. saccharum* and its var. *nigrum*. These in extreme development appear abundantly distinct; when carefully scrutinized, however, there are too many intergradient forms. As I now understand the variations of *A. floridanum* I should separate them as follows.

Tree with close whitish bark becoming furrowed in age, the trunks up to 7 dm. in diameter; branchlets grayish, with purplish tinge, the young branchlets of the season 1–2 mm. thick; mature leaves minutely pilose to glabrate beneath, those of fertile shoots (not the vigorous leaders) 3–9.5 (av. 6.7) cm. long, 3.5–11 (av. 8) cm. broad, the middle lobe 2–5.5 (av. 3.3) cm. long; petioles 0.5–1 mm. thick (near middle); flowering calyx (including hypanthium) 1.5–2.5 mm. long; style 1–2.5 mm. long, stigmas 1.5–5 mm. long; anthers 1–1.5 mm. long; samaras 1.5–3 cm. long, the mature locules 5–10 (av. 6.5) mm. long and 4–6.5 (av. 5.4) mm. thick, the mature wings 1–2.2 (av. 1.6) cm. long and 4.5–9 (av. 7) mm. broad.

Petioles and young branchlets glabrous . . . . . *A. floridanum* (typical).

Petioles and often the young branchlets densely short-pilose . . . . . Forma *villipes*.

Tree with finally exfoliating bark, the trunks up to 1.2 m. in diameter; branchlets gray, the young branchlets of the season 2–3 mm. thick, oftenest densely villous; mature leaves densely velutinous beneath, those of fertile shoots 7.5–13 (av. 10) cm. long and 7–17 (av. 13) cm. broad, the middle lobe 3.5–8 (av. 6.3) cm. long; petioles 1.5–2 mm. thick near middle, heavily velutinous; flowering calyx 3–4 mm. long; style 2.5–3 mm. long, stigmas 5–6 mm. long; anthers 1.5–2 mm. long; samaras 2.5–3.5 cm. long, the mature locules 8–10.5 (av. 9.25) mm. long and 5–7 (av. 6.5) mm. thick, the mature wings 1.7–2.5 (av. 2.1) cm. long and 9–11 (av. 10) mm. broad.

Leaves slightly cordate to subtruncate at base, the 3 lobes narrowly oblong-ovate, long-attenuate, entire or remotely and obtusely lobulate . . . . . Var. *Longii*.

Leaves definitely cordate-rotund, the broad-oblong to oblong-obovate lobes coarsely and acutely lobulate.

Var. *Longii*, forma *platylobum*

The measurements (many hundreds), based on the large representation of *Acer floridanum* in the Britton Herbarium of the New York Botanical Garden and that of the Arnold Arboretum and the lesser representation in the Gray Herbarium include the Virginian material as well as the more southern and more typical specimens (PL. 725, FIG. 1, and 727, FIG. 3). As a matter of fact, the original Florida specimens and most of the recent material from there, thence to Texas and Arkansas, are smaller in all parts than the Virginian series, in which leaves and fruits approach the dimensions in var. *Longii*. It is this transitional series and occasional large-leaved and large-fruited material from the Carolinas and Georgia which forces me to the conclusion that *A. floridanum* is as plastic as *A. saccharum* and *A. rubrum*.

The Grimes material and some other in herbaria has been confused with *Acer leucoderme* Small. That, however, is a large shrub or very small tree with the leaves green on both sides (not whitened as in *A. floridanum*), and the pubescence of the lower surface minutely hirtellous (of straightish hairs) rather than pilose-tomentulous or velutinous.

IN PLATE 725 FIGS 1 and 2 are of ACER FLORIDANUM: FIG. 1, portion of fruiting branch, × 1, from Chattahoochie, Florida, *A. H. Curtiss*, no. 497*; FIG. 2, portion of inflorescence, × 3, from Grove Landing, Virginia, *Fernald, Long & Abbe*, no. 14,168. FIG. 3, forma VILLIPES: portion of TYPE, × 1, of var. *villipes* Rehder.

PLATE 726 is of ACER FLORIDANUM, var. LONGII, all figs. from TYPE-tree: FIG. 1, flowering branch, × 1; FIG. 2, flowers, × 3; FIG. 3, fruiting branch, × 1.

IN PLATE 727 FIGS. 1 and 2 are of ACER FLORIDANUM var. LONGII, forma PLATYLOBUM, both from TYPE: FIG. 1, leaf, × 1; FIG. 2, base of leaf (lower surface) and summit of petiole, × 6. FIG. 3, A. FLORIDANUM: base of lower surface of leaf and summit of petiole, × 6, from *Curtiss*, no. 497*. FIG. 4, forma VILLIPES: base of lower surface of leaf and summit of petiole, × 6, from TYPE.

IMPATIENS BIFLORA Walt., forma PEASEI A. H. Moore. This striking color-form, with cream-colored corolla, the petals heavily spotted with old-rose, occurs in NORFOLK COUNTY: wet woods and thickets along the Feeder Ditch from Lake Drummond, Great Dismal Swamp, west of Wallaceton, no. 13,682.

VITIS BAILEYANA Munson. Local range extended into SUSSEX COUNTY: bottomland woods along Nottoway River, east of Huske, nos. 13,080 and 13,658. Leaves thinner and more often lobed than in *V. vulpina* (*cordifolia*), soft-pilose like the new branchlets; fruit bluish with a bloom, sweetish, ripe and falling September 5, much earlier than the bloomless, blackish and intensely sour fruit of *V. vulpina*. See pp. 348 and 366.

V. CINEREA Engelm., var. FLORIDANA Munson. Range extended northward into KING AND QUEEN COUNTY: border of woods at head of Garnett Creek, about 1 mile northeast of St. Stephen's Church, no. 13,390.

PARTHENOCISSUS QUINQUEFOLIA (L.) Planch., forma HIRSUTA (Donn) Fern. Although it is generally stated that this form is sterile, flowering plants occur in ISLE OF WIGHT COUNTY: thicket back of sand-beach of James River, west of old Fort Boykin, no. 13,074.

SIDA INFLEXA Fernald. Range extended into GREENSVILLE COUNTY: dry sandy pine and oak woods north of Orion, nos. 13,688 and 13,689; a very fine colony, with handsomely flowering plants up to 1.5 m. or more in height, the leaves (in disturbed soil) up to 2.8 cm. broad. See p. 367.

*ANODA CRISTATA (L.) Schlecht. ISLE OF WIGHT COUNTY: abundant weed in cultivated field near James River, west of old Fort Boykin, no. 13,690.

Tentatively so identified, the plants of tropical and subtropical America (both North and South) passing as *A. cristata* being a heteromorphous series not yet critically studied. The Virginia plant, loosely villous-hirsute, has maple-like leaves, the blue-violet petals being shorter than the calyx. It is not clearly matched but, since it is obviously adventive, it would be quite unwise to give it a new name until the whole genus is adequately and critically studied. See p. 361.

*HYPERICUM PUNCTATUM Lam., forma **subpetiolatum** (Bickn.), stat. nov. *H. subpetiolatum* Bickn. in Small, Fl. Se. U. S. 790 (1903). JAMES CITY COUNTY: border of rich woods by James River, Grove Landing, southeast of Grove, no. 13,394. DINWIDDIE COUNTY: depression in argillaceous woods west of Winfield's Mill, no. 13,977. GREENSVILLE COUNTY: bottomland woods along Meherrin River northeast of Gaskins, no. 13,395. See p. 359.

When it occurs, as in the above cases, in pure colonies forma *subpetiolatum*, with oblanceolate leaves tapering to subpetiolar bases, is strikingly different from extreme *Hypericum punctatum*, with oblong or elliptic sessile round-based or subamplexicaul leaves. Much material is clearly transitional and in many cases found in the herbaria, both extremes have been collected and distributed under one label. With no evidence of a different range, forma *subpetiolatum* is best considered a well defined form.

H. PROLIFICUM L. Local range extended to ESSEX COUNTY: border of dry woods northeast of Loretto, no. 13,975. See p. 372.

H. DENTICULATUM Walt. To the single small station in Greensville County add one in DINWIDDIE COUNTY: open argillaceous woods just east of McKenney, nos. 13,976 and 14,365. See p. 373.

CUPHEA PETIOLATA (L.) Koehne. ISLE OF WIGHT COUNTY: upper margin of sand-beach of James River, west of old Fort Boykin, very scarce, no. 13,703; our first station in the Tidewater area. See p. 362.

AMMANNIA KOEHNEI Britton, var. EXAURICULATA Fern. Range extended into NANSEMOND COUNTY: border of brackish marsh along Western Branch, south of Reid's Ferry, no. 13,398. See p. 352.

LUDWIGIA PILOSA Walt. To the single known Virginia station, in Norfolk County, add an extensive one in NANSEMOND COUNTY: wooded bottomland, Adams Swamp, south of Baines Hill School, no. 13,705; the plants rooting at tips. See p. 368.

L. ALATA Ell. To the single known Virginia station add another, also in PRINCESS ANNE COUNTY: reed-marsh along Blackwater River, southwest of Pungo Ferry, nos. 13,981 and 13,982. See p. 370.

GAURA BIENNIS L. Range extended down the James. SURRY COUNTY: woods and thickets back of sand-beach, Claremont, no. 13,708. ISLE OF WIGHT COUNTY: thicket back of sand-beach, west of old Fort Boykin, no. 13,709. See p. 362.

TORILIS JAPONICA (Houtt.) DC. Local range extended to ISLE OF WIGHT COUNTY: waste ground back of sand-beach of Burwell's Bay, James River, below Rushmere, no. 13,096. See p. 344.

ZIZIA AUREA (L.) Koch. Locally abundant in ISLE OF WIGHT COUNTY: seeping calcareous wooded bluffs by James River, west of Old Fort Boykin, no. 13,093; very large, nearly 8 dm. high. See p. 345.

*Z. AUREA, forma OBTUSIFOLIA (Bissell) Fern. Casual plants with the last, no. 13,094. See p. 345.

TAENIDIA INTEGERRIMA (L.) Drude. JAMES CITY COUNTY: locally abundant, rich woods and slopes by James River, Grove Landing, southeast of Grove, no. 13,411; our first station on the Coastal Plain. See p. 359.

*LYONIA LIGUSTRINA (L.) DC., var. FOLIOSIFLORA (Michx.) Fern. NORFOLK COUNTY: fresh reed-marsh and swale along Northwest River, near Northwest, no. 13,992; compact shrub 1–2 m. high, the first from north of North Carolina. See RHODORA, xliii. 628 (1941). See p. 370.

VACCINIUM ARBOREUM Marsh. Range extended northward into DINWIDDIE COUNTY: low woods near Mt. Olivet Church, no. 13,994.

HOTTONIA INFLATA L. To the rather few stations add another

in Sussex County: open muddy soil, Coppahaunk Swamp, south of Spring Hill Church, no. 13,723.

Bumelia lycioides (L.) Gaertn. f., var. virginiana Fernald. Range extended up the James to Prince George County: many trees in thicket and woods back of beach, Windmill Point, Flowerdew Hundred, no. 13,106. Also to James City County: base of rich woods and slopes by James River, Grove Landing, southeast of Grove, no. 13,419. See p. 346.

Styrax americana Lam. Local range extended to Charles City County: wooded bank by Chickahominy River, Cypress Bank Landing, no. 13,391. See p. 357.

*Buddleja Davidi Franch. Surry County: slightly naturalized in woods and thickets back of sand-beach of James River, Claremont, no. 13,728.

*Forsythia viridissima Lindl. Southampton County: waste ground, Franklin, no. 13,726.

Cynoctonum Mitreola (L.) Britton. To the very few recorded stations add an extensive one in Southampton County: wooded bottomland of Blackwater River, southeast of Ivor, no. 13,727. See p. 366.

Sabatia stellaris Pursh, forma albiflora Britton. Extending inland to Essex County: damp sand back of beach of Rappahannock River at Ware's Wharf, northeast of Dunnsville, no. 13,422. See p. 354.

*S. campanulata (L.) Torr., var. gracilis (Michx.) Fern. Greensville County: exsiccated argillaceous fallow field near Meherrin River, northeast of Gaskins, no. 13,421. Although in Rhodora, xxxvii. 438, *S. gracilis* was reported from Princess Anne County, the material is transitional to *S. campanulata*. See Rhodora, xxxix. 444 (1937). The Gaskins plant is quite satisfactory var. *gracilis*. See p. 360.

S. dodecandra (L.) BSP. To the few recorded stations add the following. Nansemond County: border of brackish marsh along Western Branch, south of Reid's Ferry, no. 13,423. Norfolk County: sphagnous pocket at border of reed-marsh of Northwest River near Northwest, no. 13,997. See pp. 352 and 370.

Gentiana cherokeensis (W. P. Lemmon) Fernald. To the extensive area in Sussex County add one twenty-two miles farther west, in Dinwiddie County: open argillaceous low woods just east of McKenney, no. 14,001. See p. 373.

Vinca major L. Often abundantly naturalized. Seen in several counties. See p. 372.

*Cuscuta indecora Choisy. Princess Anne County: on various herbs, damp woods, Virginia Beach, no. 4149 (distrib. as *C. Coryli* Engelm.).

Identification corrected by Dr. T. G. Yuncker, who notes:

"This is the first specimen of the species I have seen from the northeastern United States". The species ranges from the West Indies and Florida to Texas and Mexico, north rather generally in the Mississippi Basin and westward.

C. Coryli Engelm. Princess Anne County: on *Cassia*, border of pine barrens, near Princess Anne Courthouse, *Fernald & Griscom*, no. 2879 (distrib. as *C. polygonorum* Engelm.).

Identification corrected by Dr. Yuncker. In his *Revision of the North American and West Indian Species of Cuscuta*, Univ. Ill. Biol. Mon. vi. 146—repr. 56 (1921), Yuncker cited Virginian material only from the Peaks of Otter and from farther west.

Hydrolea quadrivalvis Walt. Range extended into Greensville County: sandy and muddy border of Slagle's Millpond, northwest of Emporia, very abundant, no. 13,733.

Heliotropium indicum L. To the few recorded stations add one in Norfolk County: swampy woods west of Bethel Church, Gertie, no. 14,003.

Scutellaria ovata Hill, var. **versicolor** (Nutt.), stat. nov. *S. versicolor* Nutt. Gen. ii. 38 (1818).—A new station along the James. Prince George County: thickets and woods back of beach, Windmill Point, Flowerdew Hundred, no. 13,126. Also in Greensville County: rich wooded slope just above the "fall-line" by Three Creek, northwest of Emporia, no. 14,004.

Although Blake in Rhodora, xvii. 133 (1915) adopted the name *S. ovata* Hill, Hort. Kew. ed. 1: 242 (1768) and ed. 2: 242, pl. 8 (1769) for *S. versicolor* Nutt. and stated that "The types of *S. versicolor* Nutt. and *S. caroliniana* Walt., both in the British Museum, are identical with the plant here taken as *S. ovata* Hill", there seems to me considerable doubt, inasmuch as Blake proceeded (l. c. 134) to make for the plant with "enlarged floral bracts" the combination *S. ovata* var. *bracteata* (Benth.) Blake, based on *S. versicolor*, β. *bracteata* Benth. Labiat. 433 (1832–36). Nuttall definitely described his *S. versicolor* with "bractes short and sessile" and Bentham, who must have known the type, so took it up, his *S. versicolor*, β. *bracteata* "non nisi foliis floralibus majoribus subcoloratis differt". *S. versicolor* was described by Nuttall as "The largest North American species", because it had "leaves broad-cordate, large, . . . nearly smooth; petioles very long . . . leaves thin and diaphanous, a little hirsute above, 2 or 3 inches broad and 3 or 4 long, . . . peduncles [petioles] 1 and a half to 2 inches long". This account is wholly

in accord with the plant taken by Bentham, Gray and others as *S. versicolor*, the broadly cordate-ovate thin blades of the principal leaves in the short-bracted series before me ranging from 2½ to 5 inches long and 2–4 inches broad, with petioles 1–3 inches long. This plant, true *S. versicolor*, ranges from Virginia to Iowa, south to Louisiana. The material of Bentham's *S. versicolor*, var. *bracteata* comes from southern Illinois to Mississippi, Arkansas, Oklahoma and Texas. Its leaves are relatively narrow-ovate, firm, heavily pubescent, and ranging from 1½ to 3 (rarely in transitional specimens to 4) inches long, and from 1 to 2½ inches broad, with petioles ½–2 inches long. Hill's plate of his *S. ovata* shows a more branched inflorescence than I can match in most *S. versicolor* but easily matched in *S. versicolor*, var. *bracteata*, very large bracts, and narrowly ovate leaves on relatively short petioles. To me it is a far better match for var. *bracteata* than for typical *S. versicolor*. Hill described *S. ovata* with stem "subhirsutus" and so illustrated it. In typical *S. versicolor* the pubescence of the stem is a minute inflexed pilosity (Nuttall said "a soft and glandular pubescence"); in var. *bracteata* of divergent glandular hispidity. I am, therefore, treating *S. ovata* as based upon a garden specimen of *S. versicolor*, var. *bracteata*, in spite of the fact that Hill said the flowers were "rubescentes". The native plant has the corolla blue, with the lower lip whitish.

I, of course, do not know just what was taken as Nuttall's type at the British Museum and pronounced "identical" with *S. ovata*. If it is identical it disagrees in many points with Nuttall's detailed description. Bearing in mind that Nuttall did not think in terms of "types" and that he often marked with an asterisk on his labels wholly different things, which he had called the same, his rather vivid account of *S. versicolor*, accurately describing a familiar plant, should have precedence over a specimen which, if it matches Hill's plate and brief description, does not well agree with Nuttall's description.

*S. OVALIFOLIA Pers., var. **hirsuta** (Short), stat. nov. *S. hirsuta* Short in Transylv. Journ. Med. viii. 582 (1836). *S. pilosa* Michx., var. *hirsuta* (Short) Gray, Syn. Fl. N. Am. ii[1]. 379 (1878). HENRICO COUNTY: rich wooded slopes by James River, west of Varina, no. 13,123. See p. 349.

Although described from Kentucky and noted by Leonard in

Contrib. U. S. Nat. Herb. xxii. 741 (1927) only from that state, it is represented in the Gray Herbarium also from West Virginia, Ohio, Indiana and Michigan, south to Georgia and Mississippi. There is one other Virginian specimen: Wytheville, Wythe County, *Howard Shriver*. The Varina plant is the first from east of the Blue Ridge of Virginia and North Carolina.

*S. PUNCTATA (Chapm.) Leonard. JAMES CITY COUNTY: rich land, Matoaka Park (near Williamsburg), June 29, 1939, *R. W. Menzel* (as *S. serrulata* Andr.). The first from north of upland North Carolina.

*SATUREJA CALAMINTHA (L.) Scheele, var. NEPETOIDES (Jordan) Briquet. ISLE OF WIGHT COUNTY: by path on rich calcareous wooded slope along James River, west of old Fort Boykin, no. 13,739. Apparently not previously reported from North America. See p. 361.

PHYSALIS ANGULATA L. Range extended into SOUTHAMPTON COUNTY: roadside fill above wooded bottomland of Blackwater River at South Quay Bridge, east of Oak Grove School, no. 13,742; very large plants stimulated by loosening of soil, 1.2 m. high, with leaves up to 9 cm. broad.

*P. BARBADENSIS Jacq. ISLE OF WIGHT COUNTY: disturbed soil by James River, below old Fort Boykin, no. 13,741. See p. 361.

P. PUBESCENS L. Local range extended northward. ISLE OF WIGHT COUNTY: disturbed soil in bottomland woods along Blackwater River, above Broadwater Bridge, north of Zuni, no. 13,442. JAMES CITY COUNTY: calcareous fossiliferous bluff by James River, Grove Landing, southeast of Grove, no. 13,441.

SCROPHULARIA MARILANDICA L. Range extended into two additional Coastal Plain counties. MIDDLESEX COUNTY: rich wooded slope by Rappahannock River, Bay Point, no. 13,443. SURRY COUNTY: rich calcareous wooded ravines along James River, Claremont, no. 13,743. See p. 363.

CHELONE CUTHBERTII Small. SUSSEX COUNTY: swampy woods along Spring Creek, about 2 miles north of Henry, nos. 13,446 and 13,744.

*BACOPA **stragula,** sp. nov. (TAB. 728). Planta prostrata stragulos 0.5–3 dm. diametro formans; caulibus succulentis glabris valde ramosis repentibus ramis adscendentibus; foliis crassis opacis rotundo-ovatis sessilibus subamplexicaulibus 5–10 mm. longis 3.5–10 mm. latis apice rotundatis palmatinerviis nervis obscuris; floribus axillaribus, pedicellis 3–6 mm. longis adscendentibus vel patentibus deinde arcuato-recurvatis; sepalis exterioribus cordatis rotundo-ovatis apice rotundatis 4–6 mm. longis; corollis tubulosis albescentibus 4–5 mm. longis 5-lobatis, lobis apice subtruncato-rotundatis; staminibus 3 vel 4; capsulis

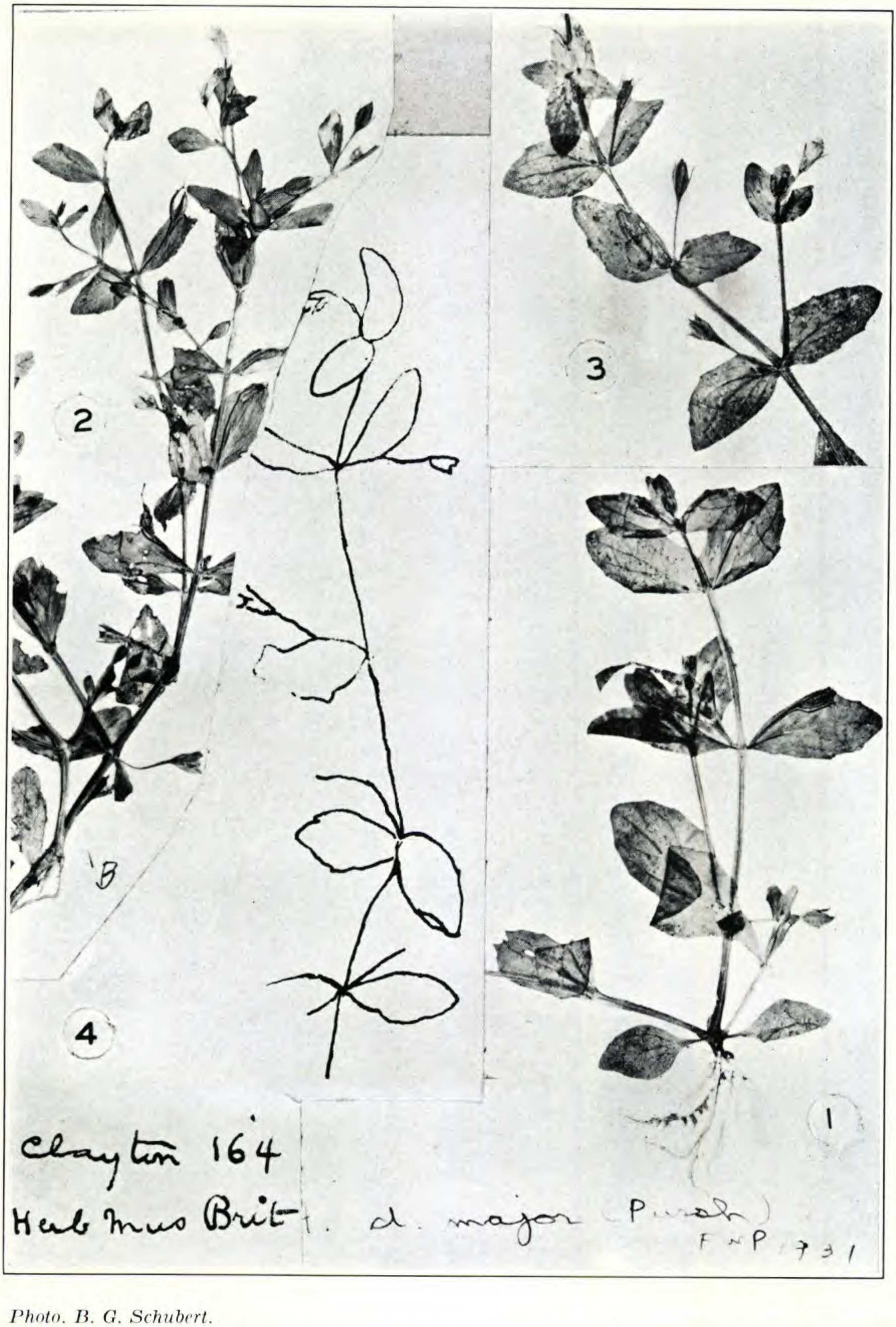

Photo. B. G. Schubert.

LINDERNIA DUBIA: portions of plants, × 1; FIG. 4, tracing of type.

Photo. B. G. Schubert.

LINDERNIA DUBIA, var. RIPARIA: portions of plants, × 1.

ovoideis obtusis 2–4 mm. longis deinde nudis.—Fresh tidal muddy or sandy shores of rivers entering Chesapeake Bay, Maryland and Virginia. MARYLAND: Salisbury, September, 1863, *Canby*. VIRGINIA: Mattaponi River, Walkerton, September 1, 1940, *Fernald & Long*, no. 12,801; Mattaponi River at Horse Landing, near King William Courthouse, October 14 and 16, 1939, *Fernald & Long*, no. 11,613 (distributed as *B. cyclophylla* Fernald), August 31, 1940, *Fernald & Long*, no. 12,799; Mattaponi River northwest of King William Courthouse, August 31, 1940, *Fernald & Long*, no. 12,800; Chickahominy River, Walker, New Kent County, September 10, 1941, *Fernald & Long*, no. 13,746; Chickahominy River, Lanexa, New Kent County, September 13, 1941, *Fernald & Long*, no. 13,748 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.); Chickahominy River, southwest of Windsor Shades, New Kent County, October 12, 1941, *Fernald & Long*, no. 14,010; Chickahominy River near Cypress Bank Landing, Charles City County, July 26, 1941, *Fernald & Long*, no. 13,447; Chickahominy River, Graves Landing, north of Holdcroft, Charles City County, September 10, 1941, *Fernald & Long*, no. 13,745; Chickahominy River, Wilcox Neck, Charles City County, September 13, 1941, *Fernald & Long*, no. 13,747; Chickahominy River, Matahunk Neck, Charles City County, October 12, 1941, *Fernald & Long*, no. 14,011. See pp. 355, 356 and 368.

Our earliest collection from Virginia was misidentified as *Bacopa cyclophylla* Fernald in RHODORA, xli. 446 (1939) = *Herpestis rotundifolia* Gaertn. f. (1807) not *Bacopa rotundifolia* (Michx.) Wettst. (1891); and Pennell, Scroph. E. Temp. N. Am. 69 (1935), cited the Maryland material of Canby as *Herpestis rotundifolia*. That species, however, is thin-leaved, the blades of the primary axes mostly 1–1.5 cm. long, the branches closely but minutely pilose, the pedicels up to 8 mm. long and pubescent, the stamens 2. So far as I can determine (and the translucent leaves of specimens are confirmatory), *Bacopa cyclophylla* (*Herpestis rotundifolia*) is aquatic or subaquatic; on the other hand, the new *B. stragula*, with thick and opaque leaves, glabrous branches, and 3 or 4, instead of 2, stamens, is a plant of tidal mud and sand. *B. cyclophylla* is apparently unknown from north of southeastern North Carolina, my statement in RHODORA, xlii. 479, 480 (1940), that our first known Virginia station connects "that at Wilmington, North Carolina, with the two in eastern Maryland" having been based on the misidentifications above referred to.

It is not clear to which of Pennell's segregates of *Bacopa* the new *B. stragula* belongs. By his treatment, l. c. 49 et seq., he then recognized three genera of the inclusive *Bacopa* with ebracteolate pedicels. These he separated by the following key:

"G. Capsule globose or ovoid, nearly equaling the sepals; outer sepal orbicular-oval to oblong.
H. Corolla 7–8 mm. long [in the key to species on p. 57 two of the three species are said to have "corolla 5–7 mm. long", the third "corolla 3–4 mm. long"], 5-lobed (because the two posterior and the 3 anterior lobes are all distinct); stamens 4; leaf-blades entire. 3. *Macuillamia*
HH. Corolla 2 mm. long, 3-lobed (because the 2 posterior lobes have united, and the anterior petal is lost, so leaving the anterior lip 2-lobed); stamens 3; leaf-blades repand. . . . . 4. *Hydranthelium*
G. Capsule ellipsoid-ovoid, much shorter than the sepals; outer sepal orbicular-cordate; stamens 2. . . . . 5. *Herpestis*"

However, in the "Annotations and Corrections" at the end of the volume (p. 630) Pennell admitted "a species of *Macuillamia* . . . which showed corollas either 4- or 3- [in addition to 5-] lobed and stamens either 4 or 3 in number, thus bridging the supposed gap [supposed only as Pennell originated this departure from conventional practice] between these groups [*Macuillamia* and *Hydranthelium*]. Moreover, the species of *Hydranthelium* from Mazatlan bore entire leaf-blades, just as given in my key for *Macuillamia*. It is evident that the former species of *Hydranthelium* are to be considered merely as florally reduced members of a common genus for which the name should be *Hydranthelium*"; whereupon the species of *Macuillamia* were formally transferred to *Hydranthelium*.

With *Hydranthelium* thus absorbing *Macuillamia*, having the corolla 3-, 4- or 5-lobed and stamens either 3 or 4, we have left as reputed "generic" differences: *Hydranthelium* with the ovoid (or globose) "capsule nearly equaling the sepals; outer sepals orbicular-oval or oblong" and stamens 3 or 4; *Herpestis* with "Capsule ellipsoid-ovoid, much shorter than the sepals; the outer sepals orbicular-cordate; stamens 2." But now comes the limnophilous new *Bacopa* to muddy the supposedly clear water; for in *B. stragula* the short capsule and the cordate-rotund outer sepals are those of only 2-stamened *Herpestis* (as defined), the 5-lobed corolla is that either of *Herpestis* or of *Hydranthelium* (as revised by taking in *Macuillamia*), but the 3 or 4 stamens put *B. stragula* into readjusted *Hydranthelium*, which is now con-

ceded to have either 3 or 4 stamens. If the number of stamens, whether 2 in *Herpestis* or 3 or 4 in *Hydranthelium*, is all that is left, there is little to separate these two reputed genera.[1] Incidentally, the newly described plant with 3 or 4 stamens but with cordate-rotund outer sepals and short capsule superficially more closely resembles *Herpestis rotundifolia* than the species placed by Pennell in *Hydranthelium*. In view of this author's recently announced preference for superficial or habital aspect as taxonomically superior to morphological differences in flower, fruit and seed, it is assumed that *Bacopa stragula*[2] might perhaps find its place in *Herpestis*. In his recent paper on *Scrophulariaceae of Trans-Pecos Texas*, Proc. Acad. Nat. Sci. Phila. xcii. 301 (1940) Pennell said, in discussing *Maurandya Wislizeni:* "Recently Dr. P. A. Munz (in Proc. Calif. Acad. Sci. IV. 15: 380, 1926) has revived Engelmann's proposed genus *Epixiphium* for this species; this was based wholly upon the fruiting characters (the accrescent sepals, the peculiar capsule, style, and seeds), but the flowering state and the habit of the plant are so similar to other species of *Maurandya* as to make such a segregation in my opinion undesirable". All sorts of possibilities suggest themselves if floral and fruiting morphology are to give way to habital aspect, a play to superficial ecology. How such sound morpholo-

[1] Those who make the artificial separation of these from *Bacopa* Aubl. (1775) should note that *Herpestis* Gaertn. f. (1807) has priority over *Hydranthelium* HBK. (1825) to which the species of *Macuillamia* Raf. (1825) have been transferred.

[2] In giving to *Bacopa stragula* this specific name I am using a common Latin adjective, found in most dictionaries of that language and meaning *forming a mat or carpet*. The first time I used this specific name was when I described an *Astragalus* (*A. stragulus*) of northern Newfoundland, which formed a dense and intricately woven carpet. Comparing it with a species of Jones (Marcus E.), I referred to his key-statement and diagnosis being perplexingly contradictory. This was enough for that militant warrior. He promptly announced that "The name straga[u]lus should not be used because it does not correspond phonetically with the genus name, and because there is no such adjective as stragalus in Latin, a fact that Fernald ought to know". Had Jones looked up the specific name *stragulus*, which was used, he could have found it. Continuing, he wrote: "He might have used stragalarius, or stragalensis, but has little authority for using a noun as an adjective, and none in a way that means nothing. Fernald recently seems afflicted with that disease known as 'caput intumescens'."—M. E. Jones, Contrib. to Western Bot. No. 15: 15 (1929). As to the latter disease, it was placed upon him by no other infector than the revered and universally loved Bailey, for the first plant with which the victim's name was publicly associated was discovered by him while still in his teens and named *Carex intumescens*, var. *Fernaldii* by Bailey. What a pity that so great and so generous a man could not have foreseen the life-long infection he was starting! If the species had only been any but *C. intumescens* (inflated)—*C. aenea* (brassy), *C. nervosa* (nervy), *C. torta* (twisted), *C. molesta* (troublesome), *C. Jonesii* (for Marcus Jones), *C. incomperta* (unknown), or almost any other—the calamity might have been avoided.

gists as Bentham, Engelmann, Gray or Wettstein would have cringed at such sophistry!

PLATE 728 is of BACOPA STRAGULA: FIG. 1, portion of plant, × 1, from Graves Landing, north of Holdcroft, Virginia, *Fernald & Long*, no. 13,745; FIG. 2, portion of TYPE, × 1; FIGS. 3 and 4, flowers, × 3, from Salisbury, Maryland, *Canby;* FIG. 5, corolla, laid open, × 10, from TYPE (the anther at the right partly hidden under the lobe to the left, the next anther broken in desiccating); FIG. 6, bud with 3 stamens, laid open, with ovary turned down, × 10, from TYPE.

*B. **simulans,** sp. nov. (TAB. 729). Planta decumbens basi radicans vel suberecta; caulibus succulentis glabris simplicibus vel sparse ramosis 0.5–2 dm. altis; foliis crassis subopacis rotundo-obovatis vel ellipticis apice rotundis 1–2 cm. longis 6–15 mm. latis palmatinerviis nervis obscuris; floribus axillaribus solitariis vel binis, pedicellis crassis rectis vel falcatis deinde divergentibus vel reflexis ad 5–11 mm. longis; sepalis exterioribus late ovatis apice rotundatis arctis 4–5.5 mm. longis; corollis tubulosis albescentibus 4 mm. longis 5-lobatis, lobis tubo aequantibus apice emarginatis, fauce flavo; staminibus 4 inclusis, antheris atropurpureis; capsulis ellipsoideis inclusis.—Charles City County, VIRGINIA: sandy-muddy fresh tidal shore of Chickahominy River, Graves Landing, north of Holdcroft, September 10, 1941, *Fernald & Long*, no. 13,749 (TYPE in Herb. Gray; ISOTYPE in Herb. Phil. Acad.); three plants collected by *E. J. Grimes* and mislabeled *Echinodorus tenellus* (no. 4135[1], cited by Pennell as 4136), the exact locality now obscure, the plants identified by Pennell as *Macuillamia obovata* Raf.

Although the hopelessly mislabeled specimens collected somewhere, presumably by Grimes (see discussions on pp. 355 and 368) have been taken by Pennell, Scroph. E. Temp. N. Am. 60 (1935) as *Macuillamia obovata* Raf., therefore *Hydranthelium obovatum* (Raf.) Pennell, l. c. 630, and *Bacopa obovata* (Raf.) Fernald in RHODORA, xxxix. 475 (1937), there is very great doubt whether Rafinesque ever saw this species. Here is Rafinesque's account.

> "333, *Macuill. obovata* Raf. glabr. vel hirsuta prostrata non flex. fol. obov. vel. ellipt. sessilib. obt. ped. fol. brevior. caps. globosa.—Virginia in the River Potomac. and in Louisiana, larger plant, leaves semiuncial". —Raf. Aut. Bot. 44 (1840).

[1] In the Gray Herbarium the material, clearly numbered 4135 and called *Echinodorus tenellus* from Lanexa, is *Sagittaria subulata;* on the label at New York the last digit is poorly typed, so that Pennell has cited it as 4136. In her *Flora of the Peninsula of Virginia*, Papers Mich. Acad. Sci, Arts and Lett. iv. 120 (1924) Eileen Whitehead Erlanson (formerly Mrs. Grimes) listed no. 4135 as *Echinodorus tenellus* and no. 4136 as *Eriocaulon Parkeri*. In the Gray Herbarium, likewise, no. 4136, the label written by Grimes, is *Eriocaulon*.

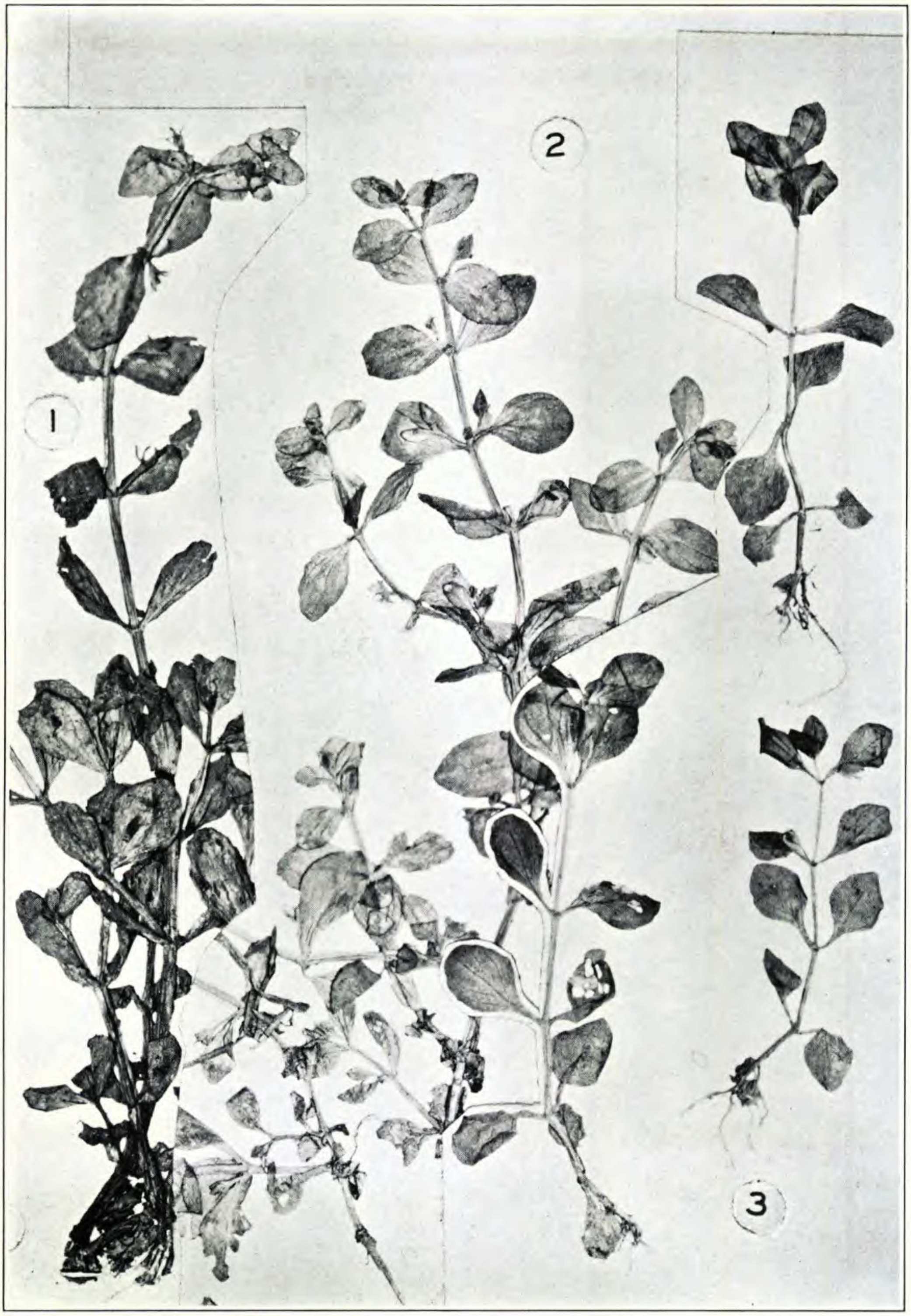

Photo. B. G. Schubert.

LINDERNIA DUBIA, var. INUNDATA, all × 1.

Photo. B. G. Schubert.

MELAMPYRUM LINEARE: FIGS. 1–3, × 1, FIG. 4, × 2; FIG. 1, summit of Desrousseaux's TYPE, photo after *Cintract*.

As Pennell, l. c. 60, states, no type of Rafinesque's species is known to exist, "certainly none in herbaria of the United States or in the Durand Herbarium . . . at Paris". To these can be added Geneva, for Dr. Hochreutiner writes me that there is nothing of it in the great herbaria there, which have many of Rafinesque's plants. Pennell, recognizing that Rafinesque's *M. obovata* was a probable mixture, attempted to sort out from among the few stated characters some for the plant of the Potomac, some for the plant of Louisiana. At best, however, there is little about Rafinesque's account to make it really safe, in the absence of actual specimens, thus to apportion the points between Louisiana and the Potomac and to apply the resultant name to a plant known only as a highly localized species at the head of tide on the Chickahominy, nearly 100 miles up-river from Chesapeake Bay and, following the isolated fresh tidal shores, several times that distance, around the forbidding saline shores, from the fresh estuary of the Potomac. *Bacopa simulans* is certainly not "prostrate", nor is its slenderly ellipsoid capsule "globose"; and its pedicels are not sufficiently "shorter than the leaves" as to attract notice. The generic account of *Macuillamia* by Rafinesque, Neogen. 2 (1825), called for "cor. four cleft". Since the plant of the Chickahominy, *Bacopa simulans*, has the corolla 5-cleft, it seems like a forced misinterpretation of Rafinesque's confused account to identify it with his *Macuillamia obovata*, with prostrate stems, short pedicels, 4-cleft corolla and globose capsules. I apologize for having so ignorantly made the needless combination *B. obovata*.

If one is seeking a plant presumably of the Potomac or of tidal rivers entering Chesapeake Bay north of the mouths of the Chickahominy and the James, with obovate leaves, pedicels much shorter than the leaves, corolla 4-cleft, and globose capsule, he can find it in *Gratiola virginiana* var. *aestuariorum* Pennell (see PL. 730, FIG. 3), a plant which, repeatedly overflowed by tidal water, may be quite depressed or prostrate. Var. *aestuariorum* is cited by Pennell, l. c. 630, as extending northward to the Delaware drainage.

Returning to *Bacopa simulans*, the name is given from its habital resemblance to *B. rotundifolia* (Michx.) Wettst. That usually coarser and prostrate aquatic of fresh water, chiefly of

the Mississippi drainage, however, has the stems copiously hirsute, the thin and clearly nerved leaves more rounded, the larger ones 2–3.5 cm. long and 1.5–2.7 cm. broad, the slender and pubescent pedicels 0.8–2 cm. long, the rather showy campanulate corolla 6–8 mm. long, with wide-spreading limb about as broad. *B. simulans*, on the other hand, is a relatively small, merely decumbent to erect plant of tidal shore, with glabrous stems and pedicels, the more opaque leaves only 1–2 cm. long and 0.6–1.5 cm. broad, the thick pedicels at most 11 mm. long, the insignificant corolla 4 mm. long and 2 mm. broad.

PLATE 729 is of BACOPA SIMULANS, from the TYPE-material: FIG. 1, habit, × 1; FIG. 2, corolla, laid open, × 10.

*GRATIOLA VIRGINIANA L., forma **acutidens,** f. nov. (TAB. 730, FIG. 1 et 2), robusta 3.5 dm. alta; foliis primariis lanceolato-acuminatis 6–7 cm. longis divergente serrato-dentatis, dentibus lanceolatis vel lanceolato-falcatis 3–6 mm. longis; sepalis 8–9 mm. longis capsulis valde longioribus.—Henrico County, VIRGINIA: "Manchester", opposite Richmond, May 7, 1894, *J. R. Churchill* (TYPE in Herb. Gray.).—An extraordinarily robust form, differing at once from typical *G. virginiana* (FIGS. 4 and 5) in its large and long-attenuate leaves with long and slender teeth, and in the sepals strongly overtopping the capsule.

*G. VIRGINIANA, var. AESTUARIORUM Pennell. KING AND QUEEN COUNTY: fresh tidal marsh of Mattaponi River, Walkerton, no. 13,143. KING WILLIAM COUNTY: fresh tidal marsh of Pamunkey River, Sweet Hall, nos. 13,142 and 13,144. NEW KENT COUNTY: fresh tidal marsh by Chickahominy River, southeast of Windsor Shades (Boulevard Postoffice), no. 13,454. NANSEMOND COUNTY: muddy rill in swampy woods east of Milk Landing, south of South Quay, no. 11,428. See p. 356 and PLATE 730, FIG. 3.

Var. *aestuariorum*, based by Pennell upon material from Salisbury, Maryland, was described as "erect, with closely ascending branches. Leaf-blades oval, 1.5–2.5 cm. long, crenate-undulate to entire. Pedicels less than 1 mm. long, so that the flowers are nearly sessile. Capsule 3–4 mm. long." An isotype before me conforms to this description and our nos. 13,142 and 13,143 well agree with it, except that they have pedicels 3–5 mm. long. Other material (Salisbury, Maryland, October 3, 1863, *Canby*, and our nos. 11,428 (FIG. 3) and 13,454), all with sessile or nearly sessile fruits, is depressed and widely branching at base. It is far more extreme than the type. Typical or at least ordinary

G. virginiana has the upper or bracteal leaves lanceolate to oblong or narrowly elliptic and subacute to acute, only rarely quite obtuse. It is a thin-leaved plant, often with pedicels 0.8–1.3 cm. long (FIG. 4) but not rarely with the flowers subsessile (FIG. 5). As the fuller collections from tidal shores and their vicinity seem to indicate, the plant of such habitats consistently has the upper leaves blunt or rounded at tip and varying from elliptic to obovate. They are, naturally, of fleshy texture. With this extended meaning I am maintaining var. *aestuariorum*. It is not without significance, however, that *G. virginiana* L. Sp. Pl. i. 16 (1753) rests exclusively on the plant, no. 379, of Clayton, "*Gratiola foliis lanceolatis obtusis vix dentatis*". When in 1917–18 Blake (RHODORA, xx. 65) and in 1930 Pennell saw the type they presumably did not recognize the common inland plant and var. *aestuariorum*, published in 1935, as separable. The latter can hardly be described as having the leaves lanceolate; states of the former could. The Gloucester County specimens noted by Pennell, Scroph. E. Temp. N. Am. 92 (1935), *Pennell*, no. 12,700, as coming from "close to the home of John Clayton", have the leaves oval to obovate and obtuse and the fruits nearly sessile. A good photograph of the type of *G. virginiana* is in order, when the Clayton plants become available.

In PLATE 730, FIGS. 1 and 2 are from the type of GRATIOLA VIRGINIANA, forma ACUTIDENS, × 1; FIG. 3, summit of var. AESTUARIORUM, × 1, from near Milk Landing, south of South Quay, Virginia, *Fernald & Long*, no. 11,428; FIG. 4, fruiting node, × 1, of G. VIRGINIANA, from Norfolk, Virginia, May 3, 1894, *Churchill*, identified by Pennell; FIG. 5, summit of G. VIRGINIANA, × 1, from Louisiana, *Hale*, validated by Pennell.

ANOTHER INTERPRETATION OF LINDERNIA DUBIA (PLATES 731–733). In his Scrophulariaceae of Eastern Temperate North America (Acad. Nat. Sci. Phila. Mon. i), 137, Pennell, in a healthy spirit of conservatism, reduced *Ilysanthes* Raf. (1820) to *Lindernia* All. (1766). With this reduction all who are of conservative mood will agree. The first American species described in the group was *L. dubia* (L.) Pennell, l. c. 141, resting upon *Gratiola dubia* L. Sp. Pl. i. 17 (1753), "*Habitat in* Virginiae *aquosis*", *G. dubia* resting for typification upon *Clayton*, no. 164, which had been described by Gronovius, Fl. Virg. ii. 129 (1743), "*GRATIOLA floribus pedunculatis, foliis ovatis crenatis*", this diagnostic phrase taken over directly by Linnaeus.

Ilysanthes dubia consists of three clearly intergrading varieties, two of fresh to barely brackish mud and shores, one of tidal shores. The last variety, well characterized by its elliptic to obovate round-tipped leaves, and nearly always cleistogamous flowers on pedicels only 1–5 (very rarely –10) mm. long, the pedicels much shorter than the bracteal leaves. This is var. *inundata* (Pennell) Pennell, l. c. 150 (1935), resting upon his earlier (1919) *Ilysanthes dubia inundata*. In some ways the most extreme trend in the species, var. *inundata* is shown in PLATE 733.

The other two varieties have the bracteal leaves more tapering at apex, merely bluntish or acute, not strongly rounded and obovate. In the plant which Pennell considers typical *L. dubia* (PLATE 732) the bracteal leaves become, as the axes prolong, strongly reduced in size. They are then lanceolate to lance-ovate or oblong and only 1–6 mm. broad, and exceeded by the upper pedicels which range from 0.5–2 cm. long. In this plant the larger foliage-leaves are narrowly elliptic or narrowly ovate and gradually narrowed to base (I find no justification for Pennell's characterization (l. c. 142) of them as "cuneate"); furthermore, all but the latest flowers have expanded corollas, though late in the season they may be cleistogamous. As Pennell says (l. c.) "integradation is complete between *L. dubia major* and *L. dubia typica*"; he therefore treats them as "subspecies", a degradation of an honorable term clearly exposed in RHODORA for May of this year. But, on the whole, *L. dubia major* (Pursh) Pennell, as subsp., l. c. 146, is a reasonably good variety (PLATE 73). Its most conspicuous character is the nearly uniform foliage-leaves and bracts. The latter are only slightly or scarcely smaller than the former, with more gradually rounded bases (therefore ovate) and less acute tips. They consistently overtop the pedicels, the latter ranging from 0.5–1.7 cm. long, the upper bracts being 5–10 mm. broad. This plant produces normal expanded corollas until late in the season. In its aggregate of characters it stands midway between Pennell's *L. dubia* subsp. *typica* and his var. *inundata*, and it frequently ventures, without more serious alteration than becoming of more fleshy texture, upon tidal shores, just as the obovate- and obtuse-leaved var. *inundata* will sometimes stray slightly from tidal flats and, getting into deep shade, become thin-leaved and etiolated.

On the whole the three varieties of *Lindernia dubia* are reasonably well marked. It seems to me, however, that, in defining the three, Pennell over-stressed the "cuneate" base of the leaf in his *L. dubia typica* and that his recollection of the Linnean type must have been obscured by time. Pennell (l. c. 41, 42) wrote: "Based primarily upon Clayton 164, which I have seen in the Clayton Herbarium of the British Museum (Natural History) in London. In this the leaf-blades are nearly all narrowed to base, yet the spreading pedicels were 15 mm. long—a combination of characters that denotes the prevalent plant of the Central Lowland . . . As the authors of both our recent northeastern manuals have been unaware of the plant now considered with its combination of cuneate leaf-blades with long pedicels, it is natural that . . . Dr. Robinson (Gray's New Man. ed. VII. 725. 1908) stressed instead the cuneate lower leaves and so applied the name to what I am now calling *L. dubia major*." It so happens that the joint editors of Gray's Manual, ed. 7, were Robinson & Fernald and, by a division of responsibility agreed upon, each of us "did" certain groups. Joint authorship, however, was assumed for all groups, and I do not find any mention in the treatment in the *Manual* of "cuneate" leaves in *L. dubia*. Instead, this is the unaltered text: "leaves ovate, rounded, or oblong, . . . the upper partly clasping, the lower more or less narrowed to base".[1] This description was checked by a tracing (PLATE 731, FIG. 4) of Clayton's no. 164, TYPE of the species, sent by Mr. Edmund G. Baker to the Gray Herbarium. Although a poor fragment, the tracing of *Clayton* no. 164 shows the lower bracts oval and rounded at base as in *L. dubia major* (Pursh) Pennell. This is quite in agreement with the "*foliis ovatis crenatis*" of Gronovius and of Linnaeus. *Cuneate*, from *cuneus*, a wedge, implies straight lines converging to the basal angle. Anyone who tried to use a wedge with the rounded sides of the lower bracts of the type of *Gratiola dubia* would have his work cut out for him. It seems to me that the type of *Gratiola*

[1] Somewhat earlier Dr. Robinson had discussed the type of *Gratiola dubia* L. He did not note "cuneate" leaves but said: "To make sure of this identity the writer applied to Mr. E. G. Baker of the British Museum of Natural History to examine the still extant specimen of Clayton. This he most kindly did and sent a tracing of it to the Gray Herbarium [PLATE 731, FIG. 4] showing conclusively its identity with the larger-leaved relatively shorter-pediceled form, which Dr. Small has called *I[lysanthes] attenuata*".—Robinson in RHODORA, X. 67 (1908).

dubia, therefore of *Lindernia dubia*, was a fragment of the plant which Pennell calls *L. dubia major*. When the actual specimen can be examined we may possibly find that Gronovius and, after him, Linnaeus were in error in describing the "foliis ovatis"; they certainly did not say "cuneatis". My faith, however, based upon long experience with their precision, is such that I am treating as typical *L. dubia* the plant treated by Pennell as *L. dubia major*. I am, therefore, taking the chance of overloading synonymy by calling the plant with much reduced upper bracteal leaves equaled or overtopped by the upper pedicels

LINDERNIA DUBIA (L.) Pennell, var. **riparia** (Raf.) comb. nov. *Ilysanthes riparia* Raf. Ann. Nat. 13 (1820). *L. dubia typica*, sensu Pennell, Acad. Nat. Sci. Phila. Mon. i. 141 (1935), not *Gratiola dubia* L. Sp. Pl. i. 17 (1753). PLATE 732.

As to the type locality of *Gratiola dubia*, Linnaeus said only Virginia and Clayton and Gronovius gave nothing more definite. In view of Clayton's well known trips far from Gloucester County it could have come from a remote area, although it is frequent enough in the eastern counties. Pennell seems to have inferred that the type came from Gloucester County. At least, as coming from "Near type locality", he has distributed tiny plants (PLATE 733, FIG. 3) from a "wet draw in forest" near James Store, Gloucester County, *Wherry & Pennell*, no. 12,698, as *Ilysanthes dubia*, although in his later treatment he called it *Lindernia dubia* subsp. *major*. The specimens are tiny, obviously etiolated from growing in the woods, with unusually long petioles, with obovate blades broadly rounded above, with pedicels very short, and the label bears the note: "Corolla falling unopened". Why is it not an etiolated woodland development of *L. dubia*, var. *inundata* (PLATE 733, FIGS. 1 and 2) which was described with "Leaf-blades oval, all broadly rounded or obtuse; fruiting pedicels 3–5 mm. long; only the earliest corollas, if any, opening . . . nearly all the corollas falling unopened and the flowers habitually self-pollinated . . . ; plant erect"? No. 12,698 meets all these requirements; it strongly contradicts the definition of *L. dubia major* (PLATE 731), under which it is cited: "Leaf-blades oblanceolate to ovate-lanceolate, usually only the lower obtuse or rounded at apex; fruiting pedicels at least 5 mm. long; earlier corollas habitually opening; plant diffuse".